Epidémiol. santé anim., 1997, 31-32

RISK OF HYDATIDS TRANSMISSION TO DOGS IN NEW ZEALAND BY FEEDING UNTREATED SHEEPMEAT

Pharo H. [1]

La plupart des analyses du risque sont entreprises dans le but de déterminer les risques présentés par les importations d'animaux ou de leurs produits (MacDiarmid, 1993). Une application, moins ordinaire, de l'analyse du risque est utilisée pour la politique de contrôle de maladies. Un programme national de lutte contre l'échinococcose existe en Nouvelle Zélande depuis 1959. Les mesures de contrôle ont réduit l'incidence annuelle de l'échinococcose chez les animaux à moins de 10^{-6}. Cet article démontre l'utilisation des données de prévalence vis-a-vis de l'échinococcose (Echinococcus granulosus) dans un modèle d'analyse quantitative du risque pour évaluer la validité technique d'une mesure spécifique de contrôle durant la finalisation du programme de lutte contre l'échinococcose en Nouvelle Zélande.

INTRODUCTION

The majority of quantitative animal health risk analyses are carried out to determine the risks posed by the importation of animals or their products. Examples of such analyses which have been carried out in the Ministry of Agriculture in New Zealand include anthrax and green hides, maedi-visna and scrapie in sheep embryos, fish diseases in salmon flesh, and rabies in dogs (MacDiarmid, 1993).

A less common application of quantitative risk analysis is in disease control policy. A national eradication campaign for true hydatids has been operating in New Zealand since 1959. Control measures have reduced the annual hydatids prevalence in livestock to less than 10^{-6}. This paper demonstrates the use of prevalence data for true hydatids (*Echinicoccus granulosus*) in a quantitative risk analysis model to assess the technical appropriateness of a specific control measure in the final stages of the New Zealand hydatids eradication program.

METHOD

For meat to constitute a significant risk of hydatids transmission on sheep farms, several events would have to occur together :

- the slaughtered animal would have to have a fertile cyst in its offal; and
- the cyst would have to burst or be cut during slaughter or offal removal, thereby contaminating some part of the surface of the carcass; and
- the meat would have to be fed to dogs without freezing or hanging the carcass. Freezing rapidly kills exposed protoscolices, and hanging allows the carcass surface to dry, which would result in the destruction of any protoscolices on its surface.

Using data on the prevalence of hydatid cysts in slaughtered sheep over 1994 and 1995, the fertility of those cysts, and the number of dogs on sheep farms being fed meat from cull sheep, a quantitative risk analysis model was developed for the probability of dogs becoming infected with hydatids through untreated meat (Pharo, 1996a). Using Monte Carlo simulation, 70% of model runs indicated that no dogs were infected by this route in any year. In 95% of model runs, the probability of any dogs becoming infected by this route was less than 0.005, which can be interpreted as a 95% confidence level.

The current prevalence of hydatids in New Zealand is very low (Chief Veterinary Officer, 1996). There are about 32 million sheep slaughtered annually, all of which are subjected to postmortem inspection. From 1994 to 1995, three sheep were found to be infected, and in only one case were fertile hydatid cysts found. Goat meat is considered to be a substantially lower risk than sheep meat, as hydatid cysts have only rarely been found in goats in New Zealand.

CONCLUSION

It was concluded that with hydatids at its current low level, the risk of any dogs becoming infected with hydatids by the feeding of untreated sheep or goat meat is negligible (Pharo, 1996b).

Quantitative methods for modelling disease control programs are a useful tool for disease control planners. However, such analyses are only as good as the data on which they are based, an this emphasises the importance of robust animal disease surveillance systems.

BIBLIOGRAPHY

Chief Veterinary Officer, 1996. Annual Report 1995. *Surveillance* 23(3), 18.

MacDiarmid, S.C., 1993. Risk analysis and the importation of animals and animal products. *Rev. sci.tech. Off. int. Epiz.*, 12 (4), 1093 - 1107, 1993.

Pharo, H.J., 1996a. Risk of hydatids (*Echinococcus granulosus*) infection in farm dogs from feeding untreated sheepmeat. Ministry of Agriculture, Wellington, N.Z.

Pharo, H.J., 1996b. Risk of hydatids infection in dogs from feeding untreated sheep or goat meat. Surveillance 23(4), 21.

[1] Regulatory Authority, Ministry of Agriculture, P.O.Box 2526, Wellington, New Zealand